

XANARO

a b i l i t y

The Evolution of Software



FROM STONE AGE TO STATE-OF-THE-ART

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PREFACE

For every rule, there's an exception. It's human nature. It's what separates a leader from those who follow. The difference is what makes a horse race.

This booklet details the evolution of software. It is not intended to be patronizing of Xanaro or its products. It is intended to assist readers and writers alike with definitive data from which informative verbal and written discussion may develop.

The three authors represented herein provide a strong and well-documented case that software is an art-form. To attempt competition with assembly-line products will only lead to self-destruction.

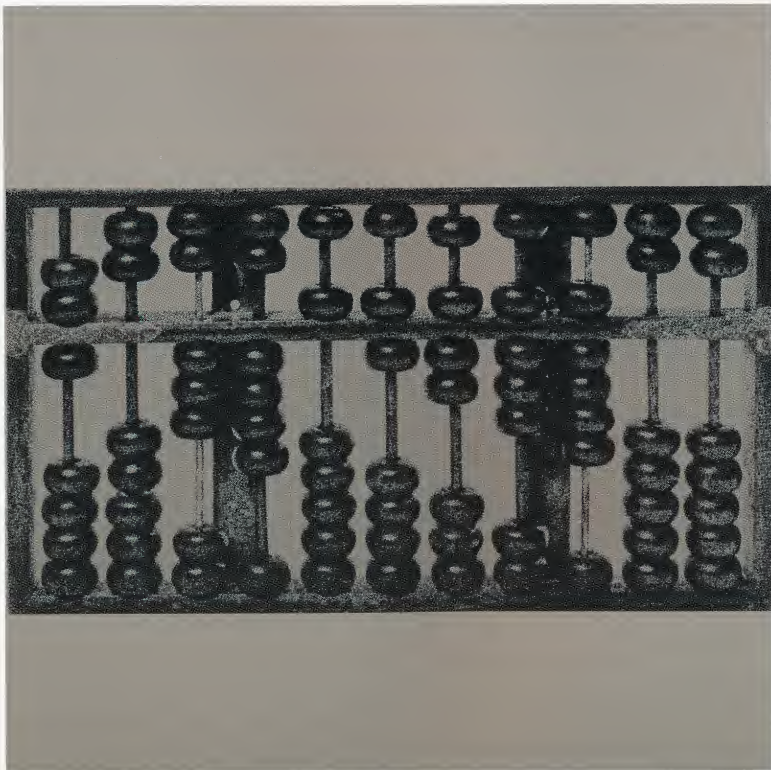
Peter Cook, vice president of advanced systems for Motorola/Four-Phase Systems, writes from experience earned over many years managing software development for companies including Textronix and Corning Glassware. His bachelor's degree is in physics from Williams College. He is a retired colonel in the U.S. Air Force Reserve and past vice president of the Computer Graphics Association.

Jeb Brodrick researched the chronology of software, authored that section and served as publication editor. He is a graduate of the University of California at Santa Cruz with a degree in psychology. His professional experience is in marketing, audio-visual communications, consultation and negotiation. Previous editorial accomplishments include high-technology writing and a publication on international satellite communications.

Stan Goldberg founded his own communications company in New York City in 1972 where he endeavors to marry art and technology through a deep concern for human values and feelings. He has a degree in physics from Georgia Institute of Technology. He also spent three years in graduate study at the Technische Hochschule, Hannover, Germany and the University of Freiburg, Germany. Additionally, he studied creative photography at MIT where he taught workshops in photography and human awareness.

Enjoy.

Roy C. Webster
*Account Supervisor
Hill and Knowlton, Inc.*



The Abacus — possibly the first computer which afforded numeric computation.

SOFTWARE — A USER'S PERSPECTIVE

by Peter G. Cook

SOFTWARE — POTENTIAL UNLIMITED

Computer software — it has enabled us to explore space, land on the moon, analyze political and social trends, prepare financial projections through spreadsheets, communicate visually via satellite, write award winning news stories under heated deadlines, hone wind resistance in automobiles, reveal and mend the inner world of the human body, generate fantastic montages used in television and motion pictures, glide a 400 ton shuttle that has just circled the earth and seeded our universe with communication satellites to a feather touchdown. It has begun to allow us to explore that which is limited only by the imagination of our minds.

We are on the brink of another industrial revolution that is not led by machines as in the past, but by intelligent systems upon which our very existence has begun to rely.

AN EXTENSION OF HUMAN IMAGINATION

Over the past 10 years, readers have increasingly come to learn that software is much more than just a set of instructions used to "run" a computer. Rather, software has become the logical representation of the human mind which extends man's hand. Leaping human limitations, it allows us to explore realms we have never before dared or been able to venture into. Software bridges gaps in time and space, quantifies, on human perspectives, awesome realms of data advancing our knowledge and scope of awareness to new levels never before conceived. It is computer software, developed by humans, that brings us to the edge of a new era of life. And it is in this era that many of humanity's problems may very soon be solved.

As profound as this medium is there are many who have not really been exposed to what software is, how it works, and what

relation it has to our daily existence — in fact, many of us simply are not aware how much software touches us. More important, most people probably do not know how much of an effect we have on the development of software which, by its very nature, is designed to aid us, to interact with us.

Let me shed some light on the mysterious subject of software by starting with an analogy.

COMPOSING A SOFTWARE SCORE

Computer software may be compared to a musical score about to be played by an orchestra. The orchestra, like the computer, awaits the conductor to signal the start. Will the music be a Strauss waltz, a Sousa march, or a symphony by Beethoven. The result is determined by the notes in the score. In a computer system, what occurs is determined by the instructions contained in the software. Software is

to a computer what a score is to an orchestra. The orchestra produces music, computers produce a wide range of results.

Software is really something which has been around for many years, long before the computer came on the scene. The policies and procedures which are followed in any paperwork system are a form of software. The difference between computer software and paper policies is a function of how the computer operates.

Computers execute programs exactly the way they are instructed whereas humans have the ability to apply judgement to make decisions based on the instructions, by editing, altering or ignoring them altogether.

A computer program is a series of instructions which makes the computer do something useful. Its very design is to form the interface between the user of a computer, and the hardware, or actual circuits.

IN RETROSPECT

In the early days of programming, it was necessary to work out on paper exactly the sequences which would instruct the machine to execute the proper steps. Cards were then punched up which contained the instructions in "machine" or computer code and read into the machine. The entire process, simple in comparison to today's systems, was both slow and error prone.

The process of eliminating errors or "bugs" in the early programs was and still is known as debugging. However, incredible changes have taken place in both information processing speed and information storage. Computers have become more complex and a number of new capabilities have been added. Magnetic tapes and disks supplemented, and later replaced punched cards as media for carrying data. New memory technologies made much larger memories possible.

With these new developments came increasing difficulties in keeping track of the

operations occurring inside the machine. By the mid-sixties, most machines ran with a kind of software called "operating systems" enabling them to perform an infinite number of tasks. Enhanced further, it became possible to put more than one program into memory at the same time so that a multiple number of operations or tasks could occur simultaneously. Thus, calculations could be performed while other information was being fed into the machine for an entirely separate function.

FROM MACHINE LANGUAGE TO HUMAN LANGUAGE

Another software development of the sixties was the "compiler", a program which read in "source code" or language which people were able to work with and understand much easier than the language the machine utilized directly to carry out its instructions. These compilers allowed the development of well known languages used today such as FORTRAN, COBOL, and BASIC.



Blaise Pascal — inventor of the first mechanical calculator.

Much later, "timesharing" was introduced which allowed several users to utilize the computer. Equipped with a number of terminals all tied to one computer, each was treated much like a separate operator's console. Full access to the machine's facilities was made available. Each was unaware of what the other users were doing, and had the illusion of private use of the system.

A NEW INDUSTRY — SOFTWARE

The reduction in price and size of the computer which has been made possible by semiconductor technology has been the basis for personal computers. Resembling terminals, these self contained computers known as micro-computers, or micros, have afforded people with powerful systems with which to run a plethora of software. It is in part from the introduction of the micro or PC that the software industry has been given incredible impetus for growth.

FROM CONCEPT TO TEST MARKETING

Software development is far from a mature engineering discipline. Estimates of time to completion are difficult to make, and real functionality often depends on substantial modification made after the initial use of a package. In fact, an important step of the software development process is called a "beta test", which is the introduction of a new package into a real use environment under test conditions to see how well it will perform.

A simple program or spreadsheet for a personal computer can be written in a few hours, and can perform useful functions for the writer. A large system, such as payroll, production control, or order entry can require numerous people several years to design and put into operation.

The difficulty of software development increases greatly as the number of people involved increases, because of the numer-



Known as "Jacquard's Loom," Joseph Jacquard gave us an early look at machine programming — a loom controlled by punched cards.

ous communications channels which are involved. Management of very large programming projects is the subject of a great deal of investigation at present — the general experience has been that the projects always take longer than originally envisioned.

INTELLIGENT SOFTWARE — A POWERFUL KEY TO EASE OF USE

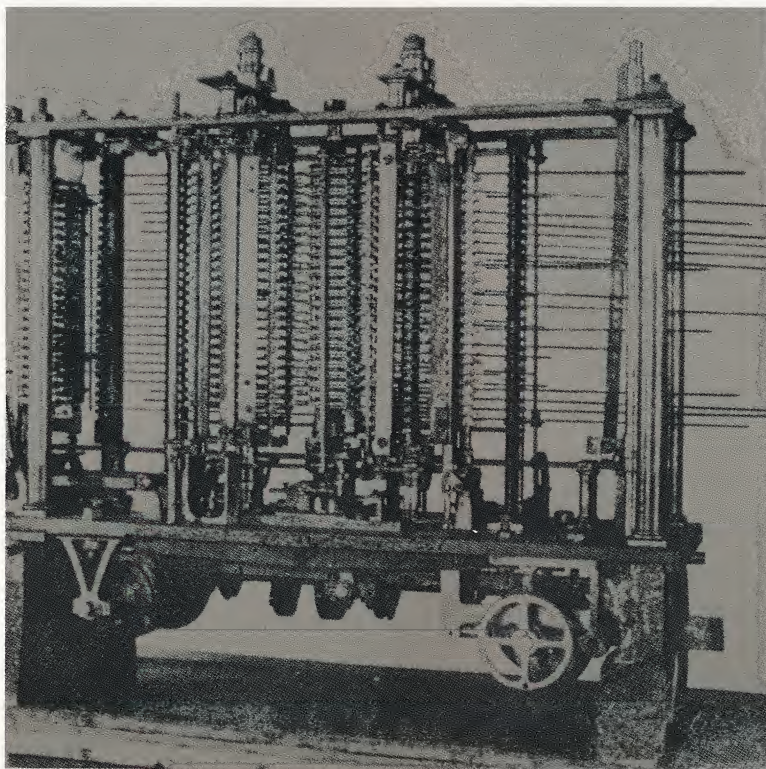
In the future, we will see a reduction in the proliferation of different computer systems. Standardized operating systems and languages considered restricting to software development will soon yield to multiple computer languages and operating systems simplifying projects and affording even greater capabilities. Eventually software creation will be more like composing than bridge building.

Already we foresee a newly emerging technology applied to the development of computer programs. "Expert Systems" are

now used in a wide number of professional disciplines to perform legal searches, diagnose diseases, and explore oil, to name just a few. Eventually the application developer will conduct a dialog with the computer and the two will work in unison to create a well detailed program.

In fact, the likeliness of computers writing their own programs is already beginning to appear on the horizon. We are reaching an age where computers are becoming capable of mimicking human reasoning. Artificial intelligence may soon give computers the means of producing many answers which, as yet, only humans have been able to provide.

The ultimate in powerful software, power integrated with user friendliness, is really just beginning — the development of software which gains humans the means of accomplishing tasks heretofore afforded only by professionals is already in view. I, for one, applaud it.



Designed to add, subtract, multiply and divide, Babbage conceived the Analytic Engine which was built after his death by his son in 1871.

HISTORY OF SOFTWARE

by Jeb Brodrick

Shown here in a time line, we'll look at the development of computer software and hardware through an examination of the events which lead up to the current state of the art in software.

THE FIRST COMPUTERS — THE BEGINNING

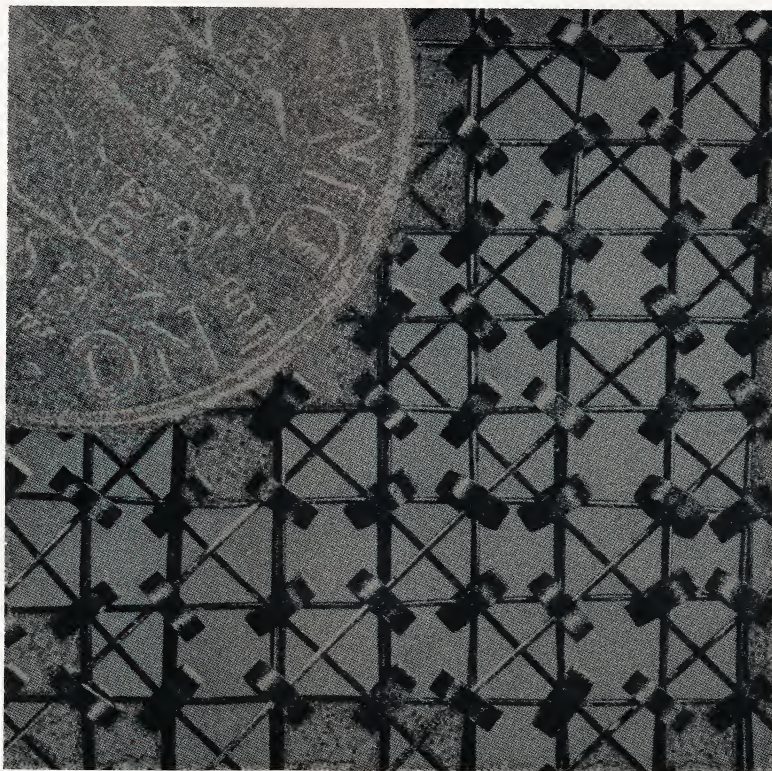
485-425 BC — Attributed to the Chinese, the abacus may be the first representation of the computer historically dating back 3000 years. It surfaced throughout several other cultures and was limited to addition, subtraction, multiplication and division. The person operating the abacus was, in effect, the program operating the machine.

MIDDLE AGES — The mechanical clock may have afforded a close representation or precursor to the early computers. Running on only one set of "instructions", the mechanical clock kept track of the time of

day through a series of gears and displayed time through two hands on its face.

MID 1600'S — "NAPIERS BONES" — Through a geometrical series called logarithms, John Napier proved one could multiply and divide numbers by adding and subtracting their representations. Logarithms of numbers were placed on a set of ivory rods ("Napier's bones") and slid up and down which added or subtracted the numbers' geometrical series. Later (1650), Robert Bisaker developed this into the slide rule and placed the numbers on wood.

1642 — The development of first real mechanical calculator was attributed to Blaise Pascal who designed a series of rotating wheels. Similar to today's automobile odometer, it performed simple addition and subtraction.



Magnetic core memory utilized during 3rd generation to store information.

1690 — Gottfried van Leibnitz, a German mathematician, built a machine that could add, subtract, multiply, divide, as well as perform square roots. The "instructions" were pre-programmed mechanically.

1800'S — A weaver by trade, Joseph Jacquard developed a loom which was controlled by punched cards. His attempt to automate the weaving process was based on a set of cards made of cardboard and were instructions read by the machine as they passed over a series of rods. Each card represented a different color or loop and thus several cards were used to complete the loom.

1812 — Charles Babbage built a small model of what was called the "difference engine". His original intent was to build a machine which could calculate and print results without human intervention. A larger version was daunted due to technological inability to manufacture parts since the

technology of the day could not meet tolerance standards required for the machines' operation. He later conceived a device which could add, subtract, multiply, and divide according to instructions on coded cards which allowed intermediate results to be stored in a memory unit. Called the "Analytic Engine", it contained features found in today's systems. Though conceived in 1833, it was not built until his son, in 1871, built it according to his father's specifications. The senior Babbage earned the reputation of being "the father of computers."

1880'S — Herman Hollerith, a statistician, developed punch cards using code (Hollerith code) — 12 rows, 80 columns. The original design was used for census taking by the American government. This project, the largest scale data processing environment, led to Hollerith's development of his Tabulating Machine Company.



Magnetic tape replaces punched cards as media for information storage.

1911 — The Tabulating Machine Company merges with several other corporations to form the International Business Machines Corporation (IBM).

1920-1930'S — Addition, subtraction, multiplication and division, interpretation of alphabetic data, and record keeping were the gains afforded by IBM and Burroughs. These machines were known as accounting machines or tabulators.

1944 — The development of the first modern day computer was initiated by a joint effort between Howard Aiken of Harvard University, IBM, and the U.S. War Department. Called the Mark I computer, it was designed to handle large number crunching and was the first automatic calculator which utilized electromagnetic relays and mechanical counters.

1946 — The Electronic Numerical Integrator and Calculator (ENIAC) was later developed performing multiplication in

three-thousandths of a second compared to the Mark I's 3 seconds and possessed no internal memory. Instructions had to be fed into the machine by a series of switches. Developed by Eckert and Mauchly at University of Pennsylvania, the project was sponsored by the War Department.

EDSAC (Electronic Delay Storage Automatic Computer), England, Cambridge University and EDVAC (Electronic Discrete Variable Automatic Computer), the University of Pennsylvania, USA, were the first to perform arithmetic and logical operations without human intervention. The first stored-program computers, they depended solely on stored instructions, though EDVAC came just two months after EDSAC.

A total of four generations mark significant distinctions in computing through



Powerful mainframes such as this are used in complex environments such as world-wide banking, aerospace, and motion picture animation.

advancements in both software and hardware. Presented here are the more salient episodes which define and introduce subsequent generations.

FIRST GENERATION: 1951-58

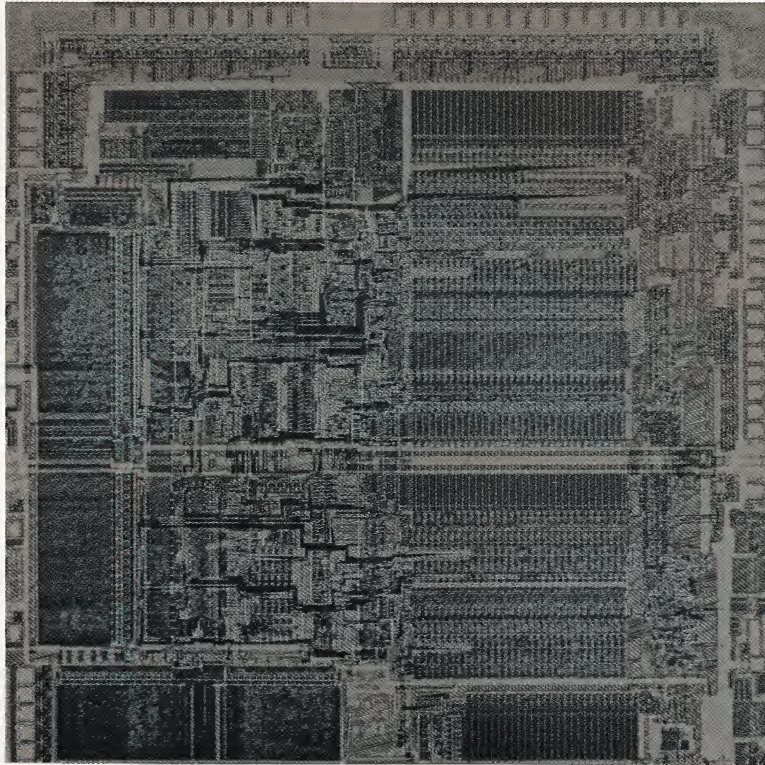
1951 — Dedicated to business data processing applications, the Universal Automatic Computer (UNIVAC I) was sold commercially to the U.S. Census Bureau in 1951 and marks the use of the computer for business purposes though its predominant use lay within scientific applications.

During this time the computer was truly a binary machine which distinguished between on and off marked as magnetized spots on a rotating drum used as a storage medium. Programming these first computers required using machine language or, on and off commands.

1952 — Dr. Grace Hopper's contributions made programming easier through the development of symbolic languages. Instructions were written with symbolic codes called mnemonics or memory aids replacing strings of ones and zeroes. One word was used to represent an entire string which stood for a machine language instruction.

OVERALL DEVELOPMENTS —

- Vacuum tubes in electronic circuits
- Magnetic drums as primary internal-storage medium
- Main-storage capacity on limited basis
- Punched card orientation — slow input/output
- Symbolic language programming
- High heat generation requiring high maintenance



Through advanced miniaturization processes, chips now perform tasks that once required large computers.

SECOND GENERATION: 1959-1964

1954-57 — The first high level programming language which resembled English language, the Formula Translator — FORTRAN, was developed by IBM.

1961 — COBOL (Common Business-Oriented Language) developed for business applications, included file-processing, editing, and input/output capabilities.

1963 — Standardization of FORTRAN IV used extensively for scientific applications.

OVERALL DEVELOPMENTS

- High level programming languages — FORTRAN, COBOL
- Transition from vacuum tubes to transistors
- Magnetic core as primary internal-storage medium
- Tape begins to replace punched cards, faster input/output
- Reduced hardware size and heat output

- Greater speed and reliability
- Batch processing — applications: billing, payroll, updating inventory files

THIRD GENERATION: 1965-1970

IBM's introduction of the System 360 invokes the third generation where integrated circuits replace transistors. Development of new operating systems required re-education towards adapting to new, faster internal architectures. This produced an extensive need in reliable software for new operating systems which lead to the development of a new industry — the software industry.

1965 — Emergence of first series of mini-computers for commercial use introduced by Digital Equipment Corporation.

Remote terminals placed in multiple and various geographic locations beckoned the time-sharing environments.

OVERALL DEVELOPMENTS

- integrated circuits replace transistors
- magnetic cores
- disk orientation gives greater input/output capacities
- reduced size, greater reliability and performance
- emergence of software industry
- introduction of minicomputers
- high level programming languages more extensively used

FOURTH GENERATION: 1971-CURRENT

The current generation heralds the use of LSI (large scale integrated circuits) and the development of VLSI (very large scale integrated circuits) both of which further increased the number of circuits contained on a single silicon chip. Greater compactness, increased performance and reduced cost resulted.

From these advancements microcomputers emerged. Greeted with overwhelming popularity, the personal computer quickly found its way into home and business environments promoting enormous opportunities. The software industry burgeoned to meet growing demands and competition ensued so rapidly that barely one product entered the market before an improvement was made which outdated its predecessor.

Several products soon found their way to the front of the heated marketplace through their power, adaptability and reliability. Concentrating their resources on further research and development, several firms gained healthy market share by producing powerful software packages enhancing both home, educational and business efforts.

HUMAN CONCERNS IN SOFTWARE DEVELOPMENT

by Stan Goldberg

TECHNOLOGIC TRANSPARENCY

It's Monday morning. Time to go to work. We hop into the car and a while later arrive at our destination. How many of us give a second thought to the fact that we have been commanding one of the most powerful and technologically complex tools at our disposal — the automobile? Most of us aren't concerned with what's going on under the hood outside of fuel, oil and water.

We interact with the car through the steering wheel, the brake and the gas pedal. The process of driving has become second nature to us, an accepted tool to our daily lives. Imagine if using the automobile required that we learn how to work more than a dozen pedals, multiple steering wheels, and a myriad of buttons, all vital to navigation? Only the most agile

and technologically fearless would dare to drive. Thankfully, automobile manufacturers had the good sense to make the human interface to this relatively complex device simple.

THE LINK BETWEEN MAN AND MACHINE

It is the human interface that allows us to interact with technology. This makes sense since the sole purpose of technology is to aid us. The steering wheel and comfortable arrangement of simple foot pedals and switches are the humanized interface to the automobile.

Other devices of great power have also been made easy for us to use. These include the telephone, the video recorder, and the microwave oven, to name a few.

INTERACTION — A SEEMINGLY UNREWARDING TASK

The most powerful and technologically complex device to enter the 80's is the personal computer. Since its entry into the market in 1975, the desktop computer has begun to make its way into the home, schools, and office. How many of us are reasonably comfortable in the "driver's seat" of this new marvel? If the initial responses of executives in my computer classes are any example, the answer is a disappointingly few indeed.

Let's face it. Computers and the accompanying software are not as easy to use as manufacturers would like us to believe. It is an exceedingly time consuming, difficult and expensive benefit to afford — market pressure demanding constant innovation and product turnover leaves little time and resources to build in these "extras".

Designed by engineers and programmers for other engineers and programmers to use, mainframe computers, the kind used in banks and insurance companies, traditionally excluded use by untrained professionals. After all, if large computers were easy to understand and use, then I, as a data processing expert, would not be considered so indispensable. It was never a priority of the computer industry to make computers and software really easy to use for everyone.

A MARKET SURVIVAL GUIDE — POWER, ELEGANCE, EASE OF USE

However, times have changed. In almost no time, personal computers have slipped into the hands of executives, secretaries, managers, teachers and children. Buzz words such as "user friendliness" have set benchmarks for productivity and market-

ability. Enlightened by software sales rating charts, manufacturers and software publishers know that if their products are going to reach a mass market, they had better be powerful and simple to use.

It is no accident that easy to learn software possessing great utility is usually among the top sellers. Because of this, manufacturers are paying a great deal of attention to the human interface between the machine, software and user.

My staff and I have spent the past few months evaluating a considerable number of software packages from many of the major manufacturers. We were astounded at how cumbersome, slow, and difficult to use these software packages are — even for us! Documentation, the very maps which allow you to understand both the software's utility and operations are in many cases difficult to understand.

How you, the user, will actually be able to use and interact with any computer software cannot be an afterthought in the design process. Concern for the human interface must be present from the very beginnings of the product's design and programming.

A successful software product must do what it says it's going to do. It must do it quickly, easily, and flawlessly. These concerns must permeate all those involved in a project from the president to the programmers.

It has been my privilege to be human interface consultant on a software project that has indeed concerned itself from the very outset with ease of use. The development of this easy-to-use integrated software package has been an exciting and rewarding experience for all involved.

PRODUCT DESIGN — TOTAL INVOLVEMENT

Every aspect of the development of "ABILITY" involved hundreds of decisions. We knew that those decisions would color the final product in some way.

At every decision point we were involved with we made sure the end user was considered — were there easier ways to do this operation — are we confounding or clarifying — does the program look simple on the screen — can commands be further simplified — does the program flow easily — is it consistent? These are questions we constantly asked and evaluated the software by throughout its progression.

TOTAL USER SATISFACTION — THE ONLY OBJECTIVE

My own efforts would have been wasted were our programmers not foremost con-

cerned with the user's needs. This applies to management and marketing also. The attitude that I try to instill is that we are working for the end user. If he or she is comfortable with the product and is excited by its utility, speed and ease of use, then we have done our job.

I think that anyone who uses "ABILITY" will experience it as a software program designed by people for people.

We proudly put the steering wheel in your hands.



Today's microcomputers are able to perform tasks that yesterday's mainframe computers accomplished and provide homes and businesses with a plethora of software applications.

XANARO

TECHNOLOGIES, INC.

Suite 815

321 Bloor Street East

Toronto, Ontario M4W 1G9



From left to right ---- XANARO TECHNOLOGIES, INC. programmers
Michael Gardi, Ashok Patel, Tracey Allen, Andrew Forber, Tom Keith
and Richard McMurray



Mike Greenly
Director
Xanaro Technologies, Inc.



Gordon Stille
Director of Sales
Xanaro Technologies, Inc.



Robert Hryniak
President
Xanaro Technologies, Inc.



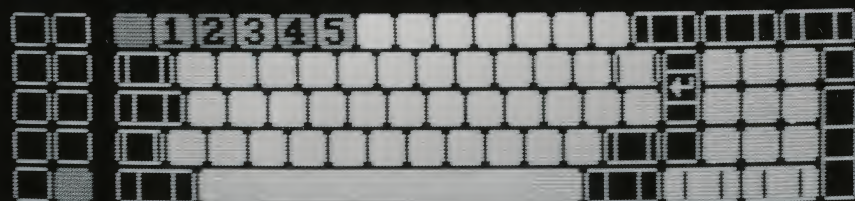
Suzanna Owen
Director of Marketing
Xanaro Technologies, Inc.



XANARO Ability(TM) injection-molded plastic packaging

Press a key to choose:

- 1 Database
- 2 Spreadsheet
- 3 Graph
- 4 Write
- 5 Telecommunicate



Press F10  for Help, Esc  to Leave

Ability software displays application choices.

LIBRARY



DATABASE

SPREADSHEET

GRAPH

WRITE

COMMUNICATE

OTHER
PROGRAMS

OTHER
FILES

<<New>>

APPOINT

EMPLOYEE

EQUIP

INVEN

MAIL

<<New>>

1QTR84

2QTR84

BUDGET83

PROJ83

PROJ84

<<New>>

GRO82V83

PROFIT82

PROFIT83

<<New>>

GROWTH83

GROWTH84

PLANNING

PROFITS

SALES83

SALES84

<<New>>

DENVER

LA

MONTREAL

NY

TORONTO

BASIC
PRESENT

FISCAL.BAS
GROWANAL.BAS
REPORT83.XPR
REPORT84.XPR

Library

Page 1, Line 8, Col 5

100% Free

Please point at a file with the cursor and press the Enter key

F7 - Options

F8 - Commands

F9 - Done

F5 - Flip

Ability Library screen displays all files

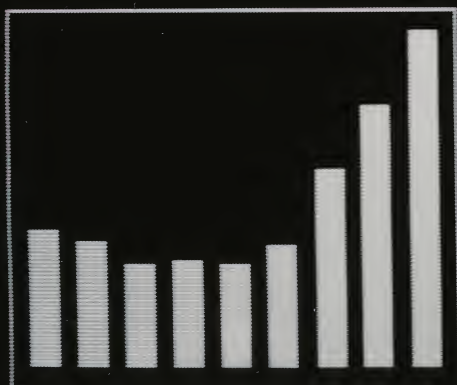
\$ 3rd Quarter

1984 \$\$\$

Shampoo Sales
Increase

\$

\$



- More Advertising
- Better Distribution
- In Store Promotions

Press **12** to EXIT, **11** to go back 1 screen, or **10** to continue.

"Presentation!" includes various Ability software applications.

XANARO

ABILITY

PRODUCT CAPABILITY — TECHNICAL

System Requirements

- IBM Personal Computer requires minimum hardware configuration of 256K RAM, 2 disk drives, color monitor and color card

System Overview

- ABILITY contains 1 system diskette, 1 tutorial diskette, and 1 "Presentation!" diskette.
- context sensitive commands
- automatic linking between cells such that a change in one cell of the program automatically converts the same entry in other dependent cells
- free intermixing of text, spreadsheet, graphics when in text mode
- status lines on each screen gives user cursory guidance
- on-line context sensitive help for indepth guidance
- up to 30 macro commands can be customized to satisfy unique needs of the user
- ability to "cut and paste" any combination of words, numbers and graphs
- concise, easy-to-understand documentation
- library feature serves as table of contents and operating shell precluding the need for user concern regarding the computer's operating system
- keystroke "flip" back to previous screen
- supports 8087 chip

Spreadsheet

- includes wide range of mathematical functions such as add, subtract, multiply, divide, divide/multiply by constant, square root, x^2 , e^x , $1/x$, $x \sqrt{y}$, weighted average, ROI, IRR, straight line depreciation, etc.
- flexible formatting — control over display formats, monetary format, fixed/floating decimal points, scientific notation, negative numbers
- naming of cell ranges and cells
- size of spreadsheet in rows and columns limited only by memory availability

Database

- free form record design
- forms driven, relational database
- sorting on any number of fields — ascending or descending
- searching with user defined criteria such as greater than, less than, equal to, containing, not containing, and/or — to find, extract, delete, add to
- mail merge
- contains "generated" fields not stored in database but computed from fields stored in

database using all available spreadsheet calculations

- limited only by disk size

Graphics

- includes line graphs, vertical/horizontal bar graphs, pie charts, exploding pie charts, — bar graphs can be stacked or clustered
- can plot 7 series by 18 elements on 1 graph
- print up to 4 graphs per page
- 12 line graphics in document
- automatic labelling and scaling
- several different shading techniques and multiple hatch styles
- different character styles
- graphs are automatically redrawn after number recalculation

Word Processing

- used to create documents, letters and forms to bring together numbers and graphs created in spreadsheet, graphs, and database mode
- what you see is what you get
- full screen editing, automatic word wrap, left-right justify, pagination and complete margin control
- block move, copy, delete, justified text
- search and replace, go-to key
- bold face and underline
- free form spreadsheet — can use formulas in text just as you do in a spreadsheet

Communications

- text, numbers and graphics can be sent through the telephone to computers all over the world
- asynchronous communication
- word size = 7 or 8 bits; Parity = None, Mark Space, Even Odd, stop bits = 1 or 2 bits: half/full duplex
- uploading and downloading files
- variable baud rates including: 300, 1200, 2400, 9600
- transfer standard = ASCII
- encrypt/decrypt for security
- terminal emulation — DEC VT52 and VT100
- touchtone or dial support
- automatic dial up
- Hayes Smartmodem support

Presentation!

- lets you create a slide-like presentation using any combination of words, graphs, and numbers
- can select from up to: 25 tunes, 8 transition techniques, several icons and variable sized text to punctuate and enhance each snapshot
- can select manual or automatic timing mode

XANARO

FOR IMMEDIATE RELEASE

FOR MORE INFORMATION: Roy C. Webster (408) 246-2181

ABILITY, NEW OPERATING ENVIRONMENT SOFTWARE,
FOCUSED FOR EASE OF USE ON IBM PERSONAL COMPUTERS

New York, N.Y. , Sept. 25, 1984 -- ABILITY, a new operating environment software package, unveiled today at the Pierre Hotel signals a major industry breakthrough by making integration of applications easy on all IBM personal computers, according to Robert G. Hryniak, president of Xanaro Technologies Inc.

More than two years in research and development, ABILITY combines word processing, spreadsheet, database, graphics, and telecommunications applications plus a unique "Presentation!" capability in one operating environment.

Hryniak, 33, created the software to serve the needs of computer users regardless of individual proficiency. ABILITY becomes a true operating environment by sheltering users from learning the technical language of computers. Productive use can be achieved in a single day.

"ABILITY offers the one consumer benefit most often promised, but least often available," he said. "ABILITY captures the power of computers for business success by being the first operating environment software to integrate common English language commands for all six applications."

--more--

"Everything about ABILITY is geared for the mass market including its \$495 pricetag which is several hundred dollars less than competitive products."

ABILITY offers functionality and human interface features in an operating environment integral to the natural, efficient, and consistent integration of all applications.

ABILITY features a special library with a table of contents and operating shell permitting changes between files using common English words to eliminate the need to memorize Disk Operating System (DOS) language.

The unique ABILITY "Presentation!" application permits the user to create a slide-like presentation capable of being punctuated and enhanced with any selection from 25 precomposed tunes, and a variety of transition techniques and icons.

Screen snapshots can be taken by a keystroke. The creator can transfer these to a diskette for presentation on a personal computer or transmit the entire package via a modem.

ABILITY allows easy access to all applications using one common workspace without need for "windows." Custom command requirements may be programmed on up to 30 macro function keys. Selective one-way and two-way dynamic linking capability between individual cells in all five applications creates an environment which automatically alters all interdependent cells accordingly.

--more--

Other distinctive features include free intermixing of text, spreadsheet and graphics from the text mode, capability to "cut and paste" any combination of words, numbers and graphs, and a "flip" key for quick comparison of data from two different applications.

ABILITY is configured to run on a minimum 256K system with two disk drives and a color monitor.

--00--

FOR IMMEDIATE RELEASE

FOR MORE INFORMATION: Roy C. Webster (Agency) (408) 246-2181

XANARO NAMES SALES MANAGER, VALUE ADDED RESELLERS

Toronto, Ont., Canada, Nov. 6, 1984 -- Gordon G. Stille, director of sales for Xanaro Technologies Inc. today announced the appointment of Stephen A. Deering, 34, as Sales Manager, Value Added Resellers.

Deering is responsible for Xanaro's VAR sales and managing the company's original equipment manufacturing (OEM) sales division. Xanaro publishes ABILITY, an integrated software package for business and professional users. ABILITY combines word processing, spreadsheet, database, graphics, and telecommunications applications, plus "Presentation!" capability in a unique operating environment.

Deering, who owns Applied Network Services, headquartered in El Toro, California, has extensive experience in sales and marketing consulting with major microcomputer dealers in California. He also is recognized for his networking and communications experience with clients in several diverse industries.

Clientele of Applied Network Services include Touche' Ross, an accounting firm; Eiger Corporation, a real estate developer; Victor Technologies, a microcomputer manufacturer; and Lytron Corp., a software publisher.

Deering previously served as district manager with Royal Business Machines' Information Processing Division in the Los Angeles and Orange County areas of California, and served in the Communications Division of Dukane Corp. in St. Charles, Illinois.

He attended Indiana University, majoring in math and chemistry, and Roosevelt University in Chicago, where he majored in computer science.

Xanaro's headquarters is located at 321 Bloor Street East, Suite 815, Toronto, Ontario, Canada M4W 1G9. Deering is located at 23704-5 El Toro Road, Suite 335, El Toro, California 92630. Telephone: (714) 770-4504.

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FOR IMMEDIATE RELEASE

FOR MORE INFORMATION: Roy C. Webster (408) 246-2181

XANARO NAMES EXCLUSIVE SALES AGENT

IN U.S. FOR ABILITY SOFTWARE

TORONTO, ONT., CANADA, Nov. 6, 1984 -- Xanaro Technologies, Inc., which publishes ABILITY integrated software for business and professional users, today named Advanced Product Solutions (APS) of Las Gatos, Calif., as the exclusive sales agent for ABILITY software in the United States.

APS President Dick Brown said, "It is our intent to bring ABILITY software to retail users by providing full service and support to retail dealers, and backing it with customer support and sales training seminars."

Under Brown's direction, APS will seek to establish a nationwide dealer sales force of between 1200 and 1500 dealers by the end of 1985.

Previously, Brown served as vice president of sales with TeleVideo Systems, Inc., a \$150 million Sunnyvale manufacturer of microcomputers. He set up sales channels for the firm including retail dealers, original equipment manufacturers (OEMs), and Fortune 1000 companies.

As the national retail director for computer marketing with Radio Shack (Tandy Corp.), Brown created a Retail Computer Center Division with 390 stores that sell computer systems. He grew the Radio Shack retail computer revenue

base from zero to \$450 million in five years.

Brown also served in various management positions with Hewlett-Packard Corp., and at International Business Machines Corp.

Though Xanaro's dealer program will be announced at COMDEX in Las Vegas, Nov. 14-18, Brown did say, "APS is the catalyst that takes Xanaro's marketing program to IBM and IBM-compatible dealers to provide the maximum gross margin and support. No distributors will be involved."

To help expand ABILITY's market base, Brown announced the appointment of Russell D. Wood of Concord as vice president of products for APS.

Wood previously was president of Concord Solutions, Inc., which owned three ComputerLand stores in Northern California. He has 12 years of extensive on-line data processing supervision of major computer systems in manufacturing, education, insurance, and maritime industries.

Brown also announced Stephen A. Wagh of San Jose as vice president of marketing and sales. Wagh previously was president of Accent Software, Inc., of Los Altos, selling advanced graphics systems for Apple computers.

Wagh also was the manager, product marketing, for VisiCorp, responsible for sales and marketing of VisiOn integrated products and served 14 years with IBM as senior product planner and marketing manager.

Xanaro Technologies, Inc., has its headquarters at 321 Bloor Street East, Suite 815, Toronto, Ontario, Canada, M4W

1G9. Advanced Product Solutions is located at 100 Verona Court, Los Gatos, CA 95030. Telephone: (408) 354-6583.

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FOR IMMEDIATE RELEASE

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XANARO PRESENTS \$1.5 MILLION SOFTWARE

GIFT TO UNIVERSITY OF NEVADA

Las Vegas, NV, Nov. 13, 1984 -- Robert Hryniak, president of Xanaro Technologies, Inc., the publisher of ABILITY integrated software for business and professional computer users, today presented \$1.5 million in ABILITY software to the University of Nevada, Las Vegas.

"This gift represents a major push toward computerization of our campus," said the University of Nevada President Robert C. Maxson. "The marriage of our university with Xanaro Technologies is a significant and strategic alliance for UNLV in its evolution to become an academic leader for high-technology study. It should prove especially beneficial on a campus-wide basis."

"ABILITY combines word processing, spreadsheet, database, graphics, and telecommunications applications plus a unique "Presentation!" program in one operating environment," according to Hryniak. "ABILITY is designed for use by anyone regardless of individual computer proficiency and is primarily beneficial to serve the needs of non-technical users."

The University of Nevada will determine how it will distribute the software to users on the southern Nevada campus, and perhaps elsewhere throughout the University of Nevada System.

Xanaro will store the software units to allow UNLV the ability to draw upon the gift as the need arises. The system of drawing on the gift in increments allows UNLV to obtain the latest ABILITY software as it goes through various technological advances.

"ABILITY software is compatible with IBM and IBM-compatible personal computers," Hryniak explained. "ABILITY offers the one user benefit most often promised but least often available --true ease of use."

President Maxson stated that the Xanaro gift will provide the impetus for the university to search for support from local computer organizations to obtain more computers for the UNLV campus. The goal is to acquire enough IBM or IBM-compatible personal computers to provide computer access to the majority of the university's nearly 400 faculty members.

Initial delivery of ABILITY software will arrive at UNLV in the first quarter of 1985.

Xanaro Technologies, Inc., is located at Suite 815, 321 Bloor Street East, Toronto, Ontario, Canada M4W 1G9.

